

Monday, 7/30/2007 1:52:30 PM
Kirk Johnston

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services

Job Number : 33781

Estimate Number : 12921

P.O. Number : N/A

This Issue : 7/30/2007

Prsht Rev. : NC

First Issue : N/A

Previous Run : N/A

Written By : *[Signature]*Checked & Approved By : *[Signature]*

Comment : Est Rev. A New Issue 07-07-04 JLM

Drawing Name : 02.500 SUPPORT

Part Number : D28921UP

Drawing Number : D2892 REV A

Project Number : N/A

Drawing Revision : A

Material : N/A

Due Date : 8/30/2007

Qty. : 8 Um: Each

Additional Product

Job Number:

Seq. #: Machine Or Operation:

Description:

1.0

PG

PURCHASING

Comment: PURCHASING

Issue P/O: 4306

Description: D6104-003

Material: 17-4 PH SS (AMS 5643 OR AISI 630) as per Dwg D6104

Material release note required.

Blank size makes (2) D2891-1

2.0

D6104003

17-4 SS Roundbar 3.25"OD

Comment: Qty.: 1.0000 Each(s)/Unit Total: 8.0000 Each(s)
Support

3.0

PACKAGING 1

PACKAGING RESOURCE #1

Comment: PACKAGING RESOURCE #1

Receive & Inspect for Transit Damage

Ensure Material Release Note is attached

4.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE

Comment: MORI SEIKI LATHE

Turn blank for Haas as per Folio FA082

5.0

QC1

INSPECT ALL DIM TO DIM SHEET

Comment: INSPECT ALL DIM TO DIM SHEET

W/O:

WORK ORDER CHANGES

PROCEDURE CHANGE

DATE STEP

By

Date

Qty

Approval
Chief Eng /
Prod MgrApproval
QC InspectorPart No: D2882-1PAR #: N/AFault Category: Prod / Machine PartsNCR: Yes NoDQA: DDate: 07/10/29QA: N/C Closed: YDate: 07.11.12

WORK ORDER NON-CONFORMANCE (NCR)

NCR: 33781

DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
07/10/27	4.0	1 piece scrap. the 2 dia. of .100" are too small. and too low. (program error)	<i>OSI 10/27</i>	- Adjust Program - Roll out Program adjustment sheet, i hand in to programmer to fix Scrap: destroy.	<i>OSI</i> 07/10/29	<i>OSI</i> 07-10-29	<i>OSI 10/27</i>	<i>OSI 10-29</i>
07/10/27	4.6	1 piece scrap. the hole are too big of .010" over tolerance (operator error) R.C. moved tool in the wrong direction.	<i>OSI 10/27</i>	Scrap: destroy	<i>OSI</i> 07/10/29	<i>OSI</i> 07-10-29	<i>OSI 10/27</i>	<i>OSI 10-29</i>
07/10/29	4	Thickness uneven on one end. MIN 0.0094" MAX 0.012 THICKNESS	<i>OSI</i> 07/10/29 per OSI 10/29	ID OK. PART ACCEPTABLE. Strength of part not an issue.	<i>N/A</i>	<i>OSI</i> 07-10-29	<i>OSI</i> 07/10/29 per OSI 10/29	<i>OSI 10-29</i>

NOTE: Date & initial all entries

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 02.500 SUPPORT

Job Number: 33781

Part Number: D28921UP

Job Number:



Seq. #:

Machine Or Operation:

Description :

6.0

HAAS1

HAAS CNC VERTICAL MACHINING #1



Comment: HAAS

Machine as per Folio FA082

Tumble & Deburr

J.L 07/11/09

7.0

QC2

INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT PARTS AS THEY COME OFF MACHINE

J.L 07/11/09

8.0

QC8

SECOND CHECK



Comment: SECOND CHECK

SA 07.11.09

9.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: ST 444

KS 07/11/12 (12)

10.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

(12)
D 07/11/12

Job Completion



W 07.11.12

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order: 33781
Description: Ø2.500 Support		Part Number: D2892-1
Inspection Dwg: D2892 Rev. A		Page 1 of 1

Inspect dimensions highlighted on inspection sheet drawing D2892 Rev. A/DSK077 Rev. A and record below:

				Recorded Actual Dimensions					
Dim	Min	Max	Go/No Go Gauge	1	2	3	4	By	Date
Lathe Section									
A	2.524	2.529		2.526	2.528	2.538	2.526		
B	3.702	3.722		3.712	3.714	3.708	3.706		
C	2.814	2.834		2.827	2.827	2.827	2.827		
D	0.718	0.738		0.727	0.728	0.728	0.728		
E	0.090	0.110		0.102	0.101	0.101	0.100		
F	2.714	2.734		2.721	2.725	2.724	2.724		
G	2.029	2.049		2.037	2.038	2.037	2.037		
H	3.214	3.234		3.225	3.224	3.224	3.224		
I	0.913	0.933		0.925	0.927	0.921	0.924		
J	0.022	0.042		0.032	0.032	0.032	0.032		
K	0.090	0.110		0.108	0.108	0.093	0.098		
L									
HAAS Section									
AA	0.115	0.135		.132	.132	.132	.133		
AB	0.290	0.310		.300	.300	.300	.300		
AC	0.040	0.060		.055	.052	.053	.053		
AD	0.115	0.135		.127	.126	.126	.127		
AE	0.240	0.260		.246	.252	.253	.252		
AF	0.188	0.193		.189	.189	.189	.189		
AG	0.240	0.260		.250	.250	.250	.250		
AH	1.126	1.146		1.142	1.140	1.145	1.141		
AI	0.454	0.474		.469	.465	.468	.464		
AJ	0.240	0.260		.250	.250	.250	.250		
AK	0.053	0.073		.063	.063	.063	.063		
AL	0.257	0.262		.258	.258	.258	.258		
AM	1.663	1.683		1.678	1.677	1.678	1.674		
AN	0.053	0.073		.063	.063	.063	.063		
AO	0.022	0.042		.032	.032	.032	.032		
AP	2.779	2.789		2.784	2.784	2.784	2.784		
AQ									
AR									
Accept/Reject									

Measured by: <i>ml</i>
Date: 07/10/28 / 07/11/09

Audited by: <i>n/A</i>
Date: 07.11.09

Rev	Date	Change	Revised by	Approved
A	02.12.12	New Issue	KJ/RF	

DART AEROSPACE LTD			Work Order: 33781	
Description: Ø2.500 Support			Part Number: D2892-1	
Inspection Dwg: D2892 Rev. A			Page 1 of 1	

Inspect dimensions highlighted on inspection sheet drawing D2892 Rev. A/DSK077 Rev. A and record below:

Dim	Min	Max	Go/No Go Gauge	Recorded Actual Dimensions			By	Date
				5A	26	37		
Lathe Section								
A	2.524	2.529		2.525	2.526	2.526		
B	3.702	3.722		3.712	3.714	3.714		
C	2.814	2.834		2.822	2.824	2.826		
D	0.718	0.738		0.728	0.728	0.729		
E	0.090	0.110		0.101	0.097	0.096		
F	2.714	2.734		2.724	2.725	2.725		
G	2.029	2.049		2.038	2.036	2.036		
H	3.214	3.234		3.222	3.223	3.223		
I	0.913	0.933		0.925	0.927	0.927		
J	0.022	0.042		0.032	0.032	0.032		
K	0.090	0.110		0.099	0.099	0.099		
L								
HAAS Section								
AA	0.115	0.135		.132	.132			
AB	0.290	0.310		.300	.300			
AC	0.040	0.060		.053	.052			
AD	0.115	0.135		.126	.127			
AE	0.240	0.260		.250	.248			
AF	0.188	0.193		.189	.189			
AG	0.240	0.260		.250	.250			
AH	1.126	1.146		1.138	1.139			
AI	0.454	0.474		.464	.469			
AJ	0.240	0.260		.250	.250			
AK	0.053	0.073		.063	.063			
AL	0.257	0.262		.258	.258			
AM	1.663	1.683		1.678	1.678			
AN	0.053	0.073		.063	.063			
AO	0.022	0.042		.032	.032			
AP	2.779	2.789		2.784	2.784			
AQ								
AR								
Accept/Reject								

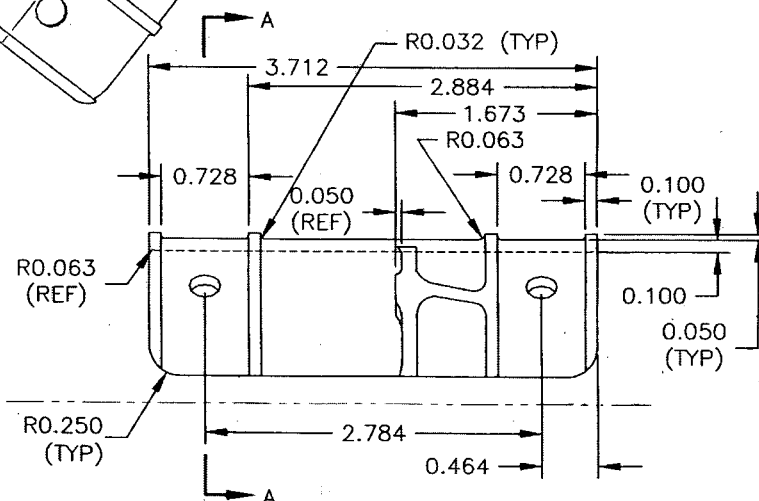
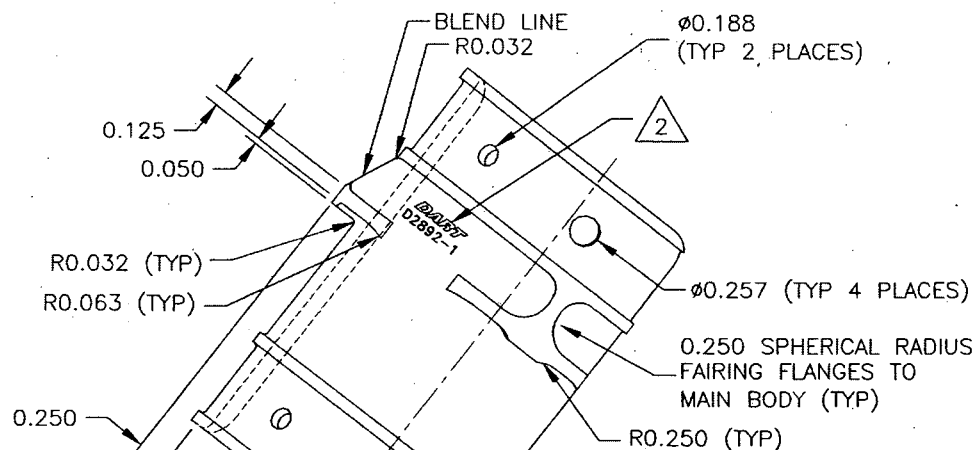
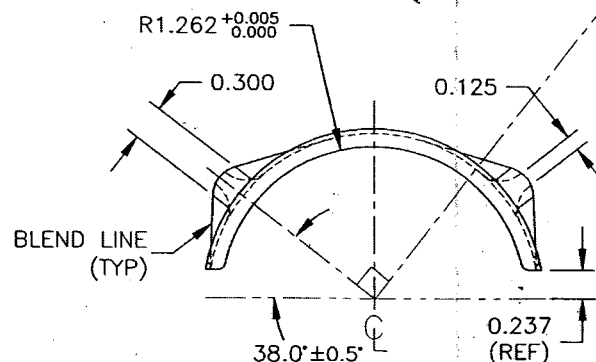
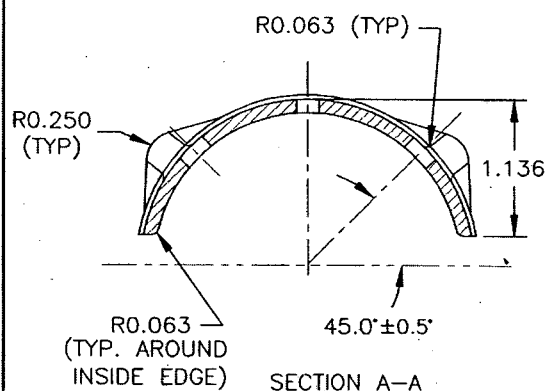
Measured by: <i>ml</i> / <i>J.L.</i>
Date: <i>02/10/28</i> / <i>07/11/09</i>

Audited by: <i>SA</i> <i>O</i>
Date: <i>04.11.09</i>

Rev	Date	Change	Revised by	Approved
A	02.12.12	New Issue	KJ/RF	

D2892-1

- 1) MATERIAL: 17-4 PH STAINLESS STEEL
HEAT TREAT TO H900 CONDITION
(900°F FOR 1 HR, AIR COOL)
MIN UTS = 170 KSI (38 HRC)
- 2) IDENTIFY WITH DART LOGO (PER DART SUPPLIED GRAPHIC) AND PART NUMBER IN THIS AREA WITH 0.125 HIGH LETTERING 0.010-0.020 DEEP
- 3) BREAK ALL UNMARKED SHARP EDGES 0.010 TO 0.020
- 4) PART IS SYMMETRIC ABOUT CENTERLINE
- 5) TOLERANCES ARE PER DART QSI 018 (REF. X.XXX = ± 0.010) UNLESS OTHERWISE NOTED
- 6) ALL DIMENSIONS ARE IN INCHES
- 7) FINISH: POWDER COAT WHITE (REF. 4.3.5.2) PER DART QSI 005 4.3



NO. 33781
 WORK ORDER
 SUBJECT TO AMENDMENT
 WITHOUT NOTICE
 UNCONTROLLED COPY
 ENGINEERING
 RETURN TO
 SHOP COPY
 DART

A		00.11.17	NEW ISSUE
DESIGN	CP	DRAWN BY	CP
CHECKED	#	APPROVED	#
DATE		TITLE	
00.11.17		D2892	
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		REV. A	
		SHEET 1 OF 1	
		SCALE	
		1:1	

4 S. 50-A



P.O. BOX 977
SYRACUSE
NEW YORK 13201

CERTIFICATE OF TEST

S O L D T O	A M CASTLE & CO ATTN: L. KURDUPSKI 3400 N WOLF RD FRANKLIN PARK, IL 60131	S H I P T O	A M CASTLE & CO 26800 MILES RD BEDFORD HEIGHTS OH 44146	OUR ORDER F5-16990-
				DATE 04/3/04

CUSTOMER ORDER # & DATE

10-44493

CUSTOMER REQ. #

DISTRICT

B PARSONS

SHIPPED
FROM

SYRACUSE

DESCRIPTION OF MATERIAL

CRU 17-4PH RT A IAC 42470
3174-10 REV 4 ASME-SA564-9BED T630 ASTM-A564-02 T630
AMS-5643Q (EX SURFACE) AISI 630 UNS #S17400

SIZE

3.250 RD

HEAT NO.

CHEMICAL ANALYSIS

HEAT NO.	C	MN	P	S	SI	NI	CR	MO	CU	FE	CB
A15389	.047	.63	.025	.021	.55	4.16	15.20	.094	3.23	73.12	.29

CASTLE METALS-CLY

DATE REC'D

REC. DOC. #42210

I.A.C. #42470

APPRV'D BY

QUANTITY

HEAT NO.

MECHANICAL PROPERTIES

QUANTITY	HEAT NO.	TENSILE PSI	YLD.2XPSI	%ELONG2IN	RED/AREAX	HARDNESS BHN 363
1990 #	A15389					

CAPABILITY PHYSICALS AFTER 900 DEG. F. - 1 HR. AIRCOOL:
195,980 172,890 13.6 50.0 BHN 388

MACRO TEST OK

FERRITE 5 %

MAGNAFLUX F/S = 0/0

REDUCTION RATIO: 27.5:1

ELECTRIC FURNACE ADD MELTED

MATERIAL SOLUTION TREATED AT 1900 DEG. F. HELD 45 MINUTES AT TEMPERATURE -
AIRCOOLED.

CRUCIBLE MATERIALS CORP. VENDOR #18610.

MATERIAL INGOT CAST.

NAFTA - YES

MATERIAL FREE FROM MERCURY CONTAMINATION AT TIME OF SHIPMENT
NO WELD REPAIR PERFORMED
MATERIAL MELTED IN U.S.A.

THANK YOU FOR SELECTING A QUALITY PRODUCT
MANUFACTURED BY THE EMPLOYEES OF CRUCIBLE SPECIALTY METALS

SWORN TO AND SUBSCRIBED BEFORE ME THIS

DAY OF 20

NOTARY PUBLIC

JACKIE L WHITE - SPECIFICATION EXAMINER

CERTIFIED
BY:

THE ABOVE MATERIAL WAS MANUFACTURED AND TESTED IN ACC
WITH ABOVE SPECIFICATIONS AND IS IN CONFORMANCE WITH
SPECIFICATION REQUIREMENTS.

CRUCIBLE MATERIALS CORPORATION
ACTING BY AND THROUGH ITS SPECIALTY METALS DIVIS
QUALITY ASSURANCE REPRESENTATIVE

PART NUMBER: D2892-1

Program Number	NCC File	Tool Number	Mod. to be Performed & Operation Description (Specify Line #)
# 1000 # 2000	A082AA01 A082AA01	6 CSD000-164 SNC-422	moved the 'X' of +.050" to clear everything. or reprogramming the rough, with the LH MCLVL-164DCN MC-432
# 2000	A082AA01		I put the drill after the roughing and the finishing, on the disk.

Requested By: MR 07/10/29 Done By: _____